

CLAIMS

The invention claimed is:

1. An illuminating device that combines an inverse function illuminating engine power level indication, and a brake light indication, where the amount of illumination of the engine power function increases as a function of decreasing engine power, and decreases as a function of increasing engine power, with a maximum of illumination provided at a selectable minimum engine power, and a minimum of illumination provided at any selectable maximum of engine power, and no illumination provided above said selected maximum engine power, and a brake light function that has priority over the power level indication function of said device, comprising:
 - a) illumination means consisting of a segmented illuminating display;
 - b) electronic circuit means to switch on, and to switch off, the illuminating segments of said display, said electronic circuit having a first input that is a DC (direct current) analog output voltage from a vehicle throttle position sensor, and a second input that is DC (direct current) voltage from a vehicle brake light circuit, present upon depression of the vehicle brake pedal;
 - c) electronic circuit means that provide adjustments to set low and high dc voltage input parameters that define the voltage range within which the inverse function illuminating engine power level indication will operate.
2. The segmented illuminating display of claim 1 where;
 - a) said display is comprised of one row of horizontally disposed individual illuminating elements or segments placed in series, and said illuminating elements functioning as both an engine power level indication, and as a break light indication;
 - b) said display comprising two or more rows of horizontally disposed individual illuminating elements or segments placed in series, said rows being placed one above the other, in parallel, and in close proximity to each other, where both rows of illuminating elements may function as both an engine power display and as a break light, or a first row of

illuminating elements is dedicated to an engine power level indication function and a second row of illuminating elements is dedicated to a break light function.

3. The segmented illuminating display of claim 1 where the segments of said display are each one or more solid state illuminating devices;
 - a) where said solid-state illuminating devices are light emitting diodes;
 - b) and where the segments of said display are sequentially and horizontally disposed, with a middle or center segment, or segments, being the first to illuminate, followed in sequence by the illumination of pairs of segments, with a first half of a pair on a left side of a center segment, and a second half of said pair on a right side of said center segment, sequentially, as engine power is decreased, until, at a selected minimum of engine power, all pairs of said segments of said display are illuminated from said center segment, to a left end and a right end of said horizontally disposed illuminating display;
 - c) and where a fully illuminated horizontal display indicates an engine at a minimum power level, and where the switching off of illuminated segments in pairs beginning at each of a left and right end of said display, sequentially, indicates an engine power level increasing, until, at a selected high engine power level output or above, all segments of said display, including said center segment, have been switched off;
 - d) where the electronic circuit of claim 1 provides a delay time between the powering on or off of display segments that allows the human eye to discern an illuminating sequence of the display segments when engine power is changed abruptly from high to low, or low to high;
 - e) and where the illuminating intensity of said center segment of said display is just above a minimum level for the average human eyesight to discern, followed by ever increasing levels of illuminating intensity of each pair of segments, as each pair of left and right side segments is illuminated, until the last illuminating segment pair on a left and a right end of said display

has reached a level of illuminating intensity just below that of a vehicle brake light;

- f) where said segmented illuminating display has a translucent plastic cover, or combination cover and lens, to diffuse and defocus light from the segmented light sources and create the effect of a collimated beam of light, increasing or decreasing in length, rather than a stepped increase or decrease in the illumination of said display.

04. The electronic circuit means of claim 1 where input of a vehicle brake light circuit DC voltage causes all segments of the segmented illuminating display of claim 1 to illuminate simultaneously from a left end to a right end, at approximately normal brake light intensity;

- a) where application of said brake circuit voltage to said electronic circuit input takes priority over the engine power indication function and will illuminate all segments of the display at full brake light intensity at any time and during any phase of engine power indication, whether or not engine power is stable, increasing, decreasing, or above a power level point that extinguishes all power level indication illumination.

05. The electronic circuit means of claim 1 where said first DC input is conducted through a normally closed relay contact that is operated to the open condition whenever, and during the time that a vehicle cruise control is operated to the on condition and a cruise hold speed has been selected.

06. The illumination means of claim 1 wherein said segmented display is in the form of concentric circular segments, the center and smallest segment being the first to illuminate and the last to extinguish.

07. An illuminating device with illuminating means for indicating variable engine power, park lights, brake lights, and directional lights is disclosed, and where the amount of illumination of said engine power level indicating means is inverse to the

amount of engine power, increasing as a function of decreasing engine power, with a maximum of illumination provided at a selectable minimum of engine power, and a minimum of illumination displayed at a selectable maximum of engine power, and no illumination above the selected maximum engine power point, a brake light function that has primary priority over the power display function, and a directional light function that has secondary priority over the power level function, comprising:

- a) illumination means consisting of a segmented illuminating display;
- b) electronic circuit means to switch on, and to switch off, the illuminating segments of said display, said electronic circuit having a first input, a second input, a third input, and a fourth input;
- c) said first input to said electronic circuit is a DC (direct current) analog output voltage from a vehicle throttle position sensor;
- d) said second input to said electronic circuit is a DC (direct current) from a vehicle brake light circuit present whenever a vehicle brake pedal is depressed;
- e) said third input to said electronic circuit is a left or a right turn signal pulsating DC voltage;
- f) said fourth input to said electronic circuit is a DC (direct current) input from a vehicle park light circuit.

08. The segmented illuminating display of claim 7 where each illuminating segment is one or more solid-state illuminating devices;

- a) and where two or more rows of said solid state illuminating devices are horizontally disposed individual illuminating elements or segments placed in series, said rows being placed one above the other, in parallel and in close proximity to each other;
- b) where one or more rows of said horizontally disposed illuminating elements is dedicated to an engine power level indication function and a brake light function;
- c) where one or more rows of said horizontal disposed illuminating segments, consisting of a left half and a right half, is dedicated to a turn signal function and park light function;

- d) where the rows of solid state illuminating elements dedicated to a vehicle turn signal are dual colored light emitting diodes capable of illuminating either an amber or a red color;
- e) where operation of either left or right turn signal functions will inhibit the engine power illuminating function across the full width of the segmented display until turn signal DC voltage pulsing has ceased, and inhibit the park light function on the signaled side until said turn signal voltage pulsing has ceased;
- f) where one or more rows of horizontally disposed illuminating elements is dedicated to a park light and a brake light function;
- g) where said solid state illuminating devices are light emitting diodes.

09. An illuminating device that varies the amount of illumination of said device as an inverse function of engine power, where the amount of illumination of said device increases as a function of decreasing engine power, and decreases as a function of increasing engine power, with a maximum of illumination at a selected minimum of engine power, and a minimum of illumination at a selected maximum of engine power, and no illumination above said selected maximum engine power value, said device comprising;

- a) an illumination means consisting of a segmented illuminating display;
- b) an electronic switching means that controls the illuminating sequence of the display segments as an inverse function of the amplitude of a DC analog voltage from a throttle position sensor.

10. The electronic circuit of claim 6 where electrical switch means is provided to switch the dual colored light emitting diodes dedicated to a turn signal function to illuminate either amber or red.